

APPENDIX.

The University Entrance Examination.

A. ENGLISH.

(a) *Composition* :—

The elementary principles and methods of composition with exercises—

- (i) in condensing the subject matter of portions of prose or poetry; and
- (ii) in writing single paragraphs, narrative, descriptive, expository, on topics suggested by the books read or subjects of common knowledge to High School students; and
- (iii) in writing complete essays of several paragraphs.

(b) *Literature* :—(i) *Detailed Study*—

Poetry : Simple narrative or lyric.

Prose : Essays or short biography.

(ii) *Non-detailed Study*—

Two or three books : Greek stories, fiction, popular history or science, short biography or essays.

B. SECOND LANGUAGE.

(a) *Kannada*.

- (a) *Text-books in modern Kannada Poetry and Prose.*
- (b) *Composition on general subjects.*

(b) *Telugu*.

- (a) *Text-books.*
- (b) *Composition on general subjects.*

(c) *Tamil*.

- (a) *Text-books.*
- (b) *Composition on general subjects.*

(d) *Sanskrit*.

- (a) *Detailed study of simple works prescribed from year to year.*
- (b) *Elements of Practical Grammar.*
- (c) *Translation from Sanskrit into English and vice versa.*

(e) *Hindustani*.

- (a) *Text-books.*
- (b) *Composition on general subjects.*

(f) *Persian*.

- (a) *Detailed study of simple works prescribed from year to year.*
- (b) *Elements of Persian Grammar.*
- (c) *Translation from Persian into English and vice versa.*

(g) French.

(a) Text-books and Grammar.

(b) Translation.

C. OPTIONAL SUBJECTS.

(a) Mathematics.

Candidates will be required to be acquainted with the use of mathematical tables.

(1) ALGEBRA.

Algebraical laws and principles and their applications. Ratio and proportion. Theory of indices. Simple surds. Theory of Equations and expressions of the second degree. Simultaneous equations of the second degree in two unknowns. The three progressions. Interest and annuities.

(2) PLANE TRIGONOMETRY.

Measurement of angles. Trigonometrical functions and their relations to one another. Simple equations. Addition and multiplication formulæ. Solution of triangles.

[N.B.—Only a general outline of the subject is expected.]

(3) GEOMETRY.

(i) Theory.

Ratio and Proportion. Similar figures. Properties of triangles and circles. Easy deductions.

Ratio and Proportion.—Definition and elementary theorems connecting the antecedents and consequents.

A given straight line can be divided internally in a given ratio at one, and only one, point; and externally at one, and only one, point.

A straight line drawn parallel to one side of a triangle cuts the other two sides, or those sides produced, proportionally; and the converse.

If the vertical angle of a triangle is bisected internally or externally, the bisector divides the base internally or externally into segments which have the same ratio as the other sides of the triangle; and the converse.

In equal circles, angles, whether at the centres or circumferences, have the same ratio as the arcs on which they stand.

Triangles and parallelograms of equal altitude are to one another as their bases.

If two triangles have one angle of the one equal to one angle of the other, their areas are proportional to the rectangles contained by the sides about the equal angles. Similarly for parallelograms having one angle of the one equal to one angle of the other.

Similar Figures.—If two triangles are equiangular their corresponding sides are proportional; and the converse.

If two triangles have one angle of the one equal to one angle of the other and the sides about these equal angles proportional, the triangles are similar.

Two triangles are similar, if the sides of the one are respectively parallel or perpendicular to the sides of the other.

If two triangles have two sides of the one proportional to two sides of the other, and an angle in each opposite one corresponding pair of these sides equal, the angles opposite the other pair are either equal or supplementary.

If from the right angle A of a right-angled triangle ABC, AD is drawn perpendicular to BC, then (1) AD is the mean proportional between BD and DC, (2) BA is the mean proportional between BD and BC and (3) CA is a mean proportional between CB and CD.

If two triangles are similar, their corresponding lines (such as medians, altitudes, inradii,) are to one another in the ratio of their corresponding sides.

Similar triangles are to one another as the squares on their corresponding sides.

Two similar polygons can be divided into the same number of triangles similar to each other and similarly placed; and the converse.

The perimeters of two similar polygons are to each other as any corresponding sides.

Areas of similar polygons are proportional to the squares on corresponding sides.

Properties of Triangles.—The three medians of a triangle meet in a point, and this point is a point of trisection of each median, and also of the line joining the circumcentre to the orthocentre.

If D is a point in the side BC of a triangle ABC such that $BD = \frac{1}{n} BC$, then $(n-1) AB^2 + AC^2 = n \cdot AD^2 + (1-\frac{1}{n}) BC^2$.

The perpendiculars from the vertices of a triangle on the opposite sides meet in a point, and the distance of each vertex from the orthocentre is twice the perpendicular distance of the circumcentre from the side opposite to that vertex.

The circle through the middle points of the sides of a triangle passes also through the feet of the perpendiculars of the triangle and through the middle points of the three lines joining the orthocentre to the vertices of the triangle.

If a perpendicular drawn from the vertex to the base of a triangle is produced to meet the circumcircle, then the distance of this point of intersection from the base is equal to the distance of the orthocentre of the triangle from the base.

The feet of the perpendiculars drawn on the sides of a triangle from any point P on the circumcircle of that triangle are collinear.

If the vertical angle of a triangle is bisected by a straight line which cuts the base, the rectangle contained by the sides of the triangle is equal to the rectangle contained by the segments of the base together with the square on the straight line which bisects the angle.

If from the vertical angle of a triangle a straight line is drawn perpendicular to the base, the rectangle contained by the sides of the triangle is equal to the rectangle contained by the perpendicular and the diameter of the circle described about the triangle.

Properties of Circles.—The locus of the points of intersection of tangents drawn at the extremities of chords of a circle which pass through a fixed point, is a straight line.

If the polar of A passes through B, then the polar of B passes through A.

If P and Q are any two points in the plane of a circle whose centre is O, then OP bears to OQ the same ratio as the perpendicular from P on the polar of Q bears to the perpendicular from Q on the polar of P.

The locus of points from which the tangents to two given co-planar circles are equal is a line perpendicular to the line of centres.

In two circles, if any two parallel radii are drawn (one in each circle), the straight line joining their extremities cuts the line of centres in one or other of two fixed points (called centres of similitude).

If through a centre of similitude S of two circles, a line is drawn cutting the circles, radii to a pair of corresponding points are parallel.

If through a centre of similitude of two circles, a line is drawn cutting the circles, then the rectangle under the distances of one pair of non-corresponding points from S is equal to the rectangle under the distances of the other pair of non-corresponding points from S; and each of these rectangles is constant.

In a cyclic quadrilateral the rectangle contained by the diagonals is equal to the sum of the rectangles contained by the opposite sides.

(ii) Practical Work.

Construction of the circumscribed, inscribed and escribed circles of triangles and regular polygons. Construction of triangles and quadrilaterals from given

data, and their division in any given ratio. Areas of polygons. Construction of similar figures.

(b) Physics.

Mechanics.—Units of length, mass and time. Position, change of position, rate of change of position, rate of change of speed in a straight line. Force, energy, work and power. The vector parallelogram, simple systems of parallel forces, centre of gravity. Simple machines. The simple pendulum treated experimentally gravitational acceleration.

Hydrostatics.—Fluid pressure. Principle of Archimedes with simple applications. Determination of specific gravity. Pressure of a gas and its measurement: atmospheric pressure. Boyle's Law. Simple piston pumps.

Heat.—Distinction between quantity of heat and temperature. Measurement of temperature by liquid-in-glass thermometers. Expansion. Specific heat and its determination. Fusion, evaporation, latent heat. Vapour pressure. Conduction, convection and radiation. Heat and work. Description of the steam engine.

Sound.—Production and propagation. Velocity in air. Reflection; echoes. Loudness and pitch of musical notes.

Magnetism.—Magnets and magnet poles. Law of force. Shape of fields due to straight and bent magnets. Magnetism of Earth: the magnetic compass. Simpler magnetic properties of iron and steel.

Electricity.—Simple voltaic cell. Electric current. Chemical effects of current. Magnetic field of current. Galvanometers. Electro-magnets. Heating effect of currents. Electromotive force: resistance and its comparison by simple substitution methods. Electric telegraphs. Electric bells. Electric light. Electric direct current motors.

Light.—Laws of reflection, and refraction with very simple applications. Lenses and mirrors. Telescopes and microscopes. Dispersion. Production of a spectrum.

(c) Chemistry.

Objects of study of Chemistry: to ascertain composition of materials; to investigate changes in composition; and from the foregoing to deduce general laws.

Mixtures and compounds: methods of resolving mixtures into their constituents; examples; sand and sugar by solution and filtration; salt and water by evaporation; alcohol and water by distillation; sand and sal ammoniac by sublimation; sulphur and iron magnetically; copper sulphate and water by crystallisation.

Chemical change: combination illustrated by sulphur and iron, sulphur and oxygen, candle and oxygen, quicklime and water. Decomposition illustrated by heating sugar, action of sodium on water, heating mercuric oxide, heating lead nitrate. Replacement illustrated by zinc and sulphuric acid, zinc and copper sulphate. Double decomposition illustrated by common salt and silver nitrate.

Ultimate products of decomposition; elements: Number of elements known. Examples of commonly occurring elements; oxygen, nitrogen, silver, gold, iron, sulphur, carbon.

Combination consists in union of elements with elements, elements with compounds, or compounds with compounds, a new compound being formed in every case. Burning as a special case of combination. Burning of phosphorus, of sulphur, of magnesium, and of a candle. Rusting of iron, oxidation of mercury and of copper. Products of burning or oxidation always heavier than material burnt or oxidised. Water and carbonic acid as products of combustion.

Composition of air as deduced from experiments on combustion. Reasons for regarding air as a mixture. The active and inactive constituents of air.

Oxygen: Discovery. Preparation. Properties. Comparison of combustion in oxygen and air. Character of oxygen compounds as illustrated by oxides of phosphorus, sodium, and mercury. Meaning of acids and bases; their characteristic properties.

Hydrogen: Preparation from sodium and water; from water by electrical decomposition; from acids by the action of metals such as iron and zinc; from

caustic alkalis by the action of aluminium or zinc. Properties. Water a compound of hydrogen and oxygen.

Composition of compounds determined: (1) By analysis, (2) by synthesis, illustrated by the case of water. Methods of carrying out these processes. Composition of water by volume and by weight. Guy Lussac's Law of Volumes. Constancy of composition of water. This constancy of composition characteristic of all compounds. Law of definite proportions. Properties of water; solvent action on solids and gases, illustrated by solutions of copper sulphate, sugar, air and carbon dioxide. Nature of rain water, sea water, spring and river water. Purification of water: distillation. Crystals and crystallisation; water of crystallisation. Extraction of salt from sea water.

Nitrogen: preparation from air. Properties.

Nitric acid: preparation from nitre; properties. Formation and nature of salts. Nitrous oxide, nitric oxide, and nitrogen peroxide.

Ammonia: preparation; properties; power of neutralising acids; solubility. Ammonium chloride and ammonium nitrate and their behaviour on heating.

Carbon: Occurrence and different forms. Properties and uses. When burnt forms carbonic dioxide. This gas always formed when carbon compounds are burnt; hence wood, candles, oil, all contain carbon. Preparation and properties of carbon dioxide; action on lime water; product of respiration of animals and plants.

Sulphur: occurrence and different forms; properties; when burnt forms sulphur dioxide.

Sulphuric acid: properties and uses.

Chlorine and hydrochloric acid: preparation of hydrochloric acid from common salt; properties of the gas and of its solution in water. Chlorine from hydrochloric acid and manganese dioxide; combination of chlorine with hydrogen and with sodium to form hydrochloric acid and common salt. Bleaching action.

Phosphorus: different forms; their properties and uses.

Silicon: a constituent of sand. Occurrence of silica free and in combination.

General properties of non-metals and metals.

Sodium and potassium: occurrence and properties. Common salt, sodium carbonate and bicarbonate, caustic soda, potassium nitrate, potassium chlorate, caustic potash.

Calcium: occurrence as carbonate. Production of lime from limestone; properties of lime; mortars. Calcium sulphate: gypsum and plaster of paris; calcium chloride; bleaching powder.

Occurrence, general method of preparation, properties and uses of zinc, iron, lead, silver, mercury, copper and aluminium. Properties of their more important compounds.

Practical Work.

The practical course will aim chiefly at developing facility in the ordinary methods of manipulation, and as regards subject matter will follow the course given in Smith's "Laboratory Outline of Elementary Chemistry," omitting the portion dealing with ionisation.

(d) Natural Science.

ELEMENTARY BOTANY.

[NOTE.—The work will be chiefly practical, if necessary, with the aid of a simple lens. There will be no detailed reference to Histology except where necessary to understand the elements of plant physiology. The candidate will be required to draw and describe parts of plants.]

1. *External Morphology.*—The root, stem, bud, and bud scales, leaf, flower, fruit and seed; their component parts, chief modifications and their functions treated practically.

2. *Systematic Botany.*—The general principles of classification and the

characteristics of the following natural orders viewed from an elementary standpoint:—

Malvaceæ, Leguminosæ, Rubiaceæ, Compositæ, Apocynaceæ, Asclepiadaceæ, Labiatæ, Euphorbiaceæ, Palmæ, Orchidaceæ, Scitamineæ and Gramineæ.

3. *Ecology*.—A brief consideration of the principal modifications of the stems of the desert and water plants and general principles of plant distribution from a geographical and ecological point of view.

4. *Physiology*.—Germination of seed, and the conditions necessary for it; functions of root, leaf, flower and pollination; simple experiments to illustrate the above.

Practical Work.

Laboratory note books of approved form for record of observations will be maintained.

OUTLINES OF HUMAN PHYSIOLOGY.

[NOTE.—The subject will be treated from a practical standpoint and all references to Histological details will be omitted.]

The leading facts concerning the chief tissues of the body; the human skeleton; the principal joints and the action of the muscles; the nature and function of blood; the position and arrangement of viscera in man, circulatory and respiratory organs; food, its nature, digestion and absorption; the principal glands and their functions; waste, its nature and mode of elimination; temperature of the body and its maintenance; the chief functions of the central nervous system, nerves and sensory organs.

ELEMENTS OF ZOOLOGY.

A brief consideration of the external characters of the following animals:—

Earthworm, spider, scorpion, cockroach, beetle, butterfly, caterpillar, fish, frog, lizard, snake, bird, bat, cat, rabbit, cow and horse.

(These animals will be studied in such a way as to bring out the relation which their form bears to their habits and mode of life.)

(a) History.

OUTLINES OF EUROPEAN HISTORY.

(f) Economics.

ELEMENTARY ECONOMICS.

(g) Logic and Scientific Method.

(h) Sanskrit.

(a) Detailed study of books—both in prose and verse—prescribed from year to year.

(b) The Elements of Sanskrit Grammar and Prosody as in Macdonnell's "Sanskrit Grammar for Beginners" or, Kale's "Smaller Sanskrit Grammar"; and,

(c) Translation of unprepared passages from Sanskrit into English and vice versa.

(i) Persian.

(a) Detailed study of books—both in prose and verse—prescribed from year to year.

(b) Elements of Persian Grammar.

(c) Translation of unprepared passages from Persian into English and vice versa.

NOTIFICATION.

No. 801—EDN. 12-16-13, DATED BANGALORE, 25TH JULY 1916.

In exercise of the powers conferred by Sections 10 and 22 of the Mysore University Regulation, 1916, the Government of His Highness the Maharaja of Mysore are pleased to prescribe the following rules to govern all appointments, punishments, retirements, removals, leave, pension, etc., of the Professors, Assistant Professors, Officers and employees of the University of Mysore.

I. All appointments carrying a salary of one hundred rupees and upwards, per mensem shall be made by Government in consultation with the University Council as far as possible.

II. Appointments carrying a salary less than one hundred rupees per mensem may be made by the University Council.

III. The Mysore Service Regulations, in force for the time being, shall be applicable to all Professors, Assistant Professors, Officers and other employees of the University mentioned in Section 22 of the Mysore University Regulation, 1916.

IV. Casual leave and leave of any other kind for a period not exceeding one month may be sanctioned by the Vice-Chancellor of the University when no acting arrangements are required in the case of all Officers whose appointment requires the sanction of Government.

V. The punishment, retirement and removal of the Professors, Assistant Professors, Officers and other employees of the University whose salary is one hundred rupees and upwards shall vest in the Government and of those whose salary is less than one hundred rupees per mensem, in the University Council.

By Order,

P. G. D'SOUZA,

*Offg. Secretary to Government,
Departments of Education and Agriculture.*